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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/071,272	02/08/2002	Greg A. Penner	11898.0021.NPUS00 (MOBS:0)	9001
7590	09/24/2004		EXAMINER HAAS, WENDY C	
HOWREY LLP HOWREY SIMON ARNOLD & WHITE 750 BERING DRIVE HOUSTON, TX 77057-2198			ART UNIT 1661	PAPER NUMBER

DATE MAILED: 09/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/071,272	Applicant(s) PENNER ET AL.	
	Examiner Wendy C Haas	Art Unit 1661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 19-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 19-39 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6172 1313 1124</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I, Claims 1-18 in the Paper filed April 12, 2004 is acknowledged.

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:
Non-initialed and/or non-dated alterations have been made to the oath or declaration. See 37 CFR 1.52(c).

Claim Objections

Claim 3 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Specifically, the claim fails to further limit the invention because homozygous and heterozygous are the only two options for the genetic makeup of the claimed seeds.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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Claims 1-13 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claimed seed mixtures are products of nature. Nothing in applicant's claims contemplates a need for the hand of man in creation of the claimed invention. The references cited by Campbell and Takahasi et al. set forth naturally occurring examples of genetic variability and seed coat color differences in plants (corn and soybeans) based on naturally occurring transposable element mutations and responses to temperature change. Numerous other examples of naturally occurring variations in genetic makeup and coat coloration of seeds are known in the art.

Claim Rejections - 35 USC § 112, First Paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 14 and 15 are rejected under 35 U.S.C. 112, first paragraph, because the specification does not reasonably provide enablement for all plant species. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims. Specifically, not all plants will produce seeds at harvest that have the same seed coat color as the parent plant, which would make step "v)" impossible. Applicant discusses only the dominant heritability of canola and soybean seed coat colors; the examiner notes that, according to information set forth in the specification, there would be heritability problems with specific seed coat color combinations of canola, soybeans

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and other plants depending on the seed coat color and the homozygous or heterozygous nature of the specific plant in question.

For example, page 8 of the specification notes that the only gene combination giving rise to a yellow seed coat in canola is aabbcc (i.e. 100% recessive). This means that if yellow-coated canola plants are pollinated by plants with any other seed coat color, a different population ratio of brown, black or yellow seed coats must result since most of the resulting plants would have a seed coat color other than yellow.

Accordingly, if applicant planted 90% black canola seeds and 10% yellow canola seeds from plants that were potentially pollinated by canola varieties with brown or black seed coats, it would not be possible to identify seed with a proprietary trait from the harvested grain by determining the amount of seed coat phenotypical marker in the sample.

The reason this would not be possible is because the sample taken from the harvested grain could be 75% brown, 24% black and 1% yellow instead of 90% black and 10% yellow; or it could be many other combinations of black, brown and yellow. The determining step in this claim relies upon the harvested grain exhibiting a predictable ratio of the phenotypical marker, which would not happen in every possible situation encompassed by the claim.

Claims 14 and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the

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invention. Specifically, applicants claim a method that relies upon the plant grown from each initial seed coat color type to produce seeds with the same seed coat color as the parent plant.

This is problematic for two reasons. First, applicant has not specified in the claim the genetic makeup of the seeds to be planted; only certain genetic makeups within the seeds planted will give rise to subsequent generations exhibiting the identical seed coat color. Second, the seed coat color of the seeds produced by the plants grown from the initial seeds planted in step “ii” of the claim can be influenced by environmental factors. See, for example, Takahasi, R. et al. “Genetic and linkage analysis of low temperature-induced browning in soybean seed coats,” which notes that low temperatures during flowering can cause the seed coat color of subsequently harvested seeds to be brown.

Claims 16 – 18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, applicants claim a method of generating hybrid soybean seed by planting seeds of two different varieties in alternate rows. Fuller et al. teach that soybean plants are naturally self-pollinated plants that are estimated to cross-pollinate at a rate of less than one percent in an open planting. Accordingly, due to a low success rate of cross-pollination, generation of hybrids is not likely and would require additional undue experimentation.

Claim Rejections - 35 USC § 112, Second Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, claims 1 and 14 recite a mixture of seeds containing primary seeds of a first variety and secondary seeds of a same or different variety that displays a phenotypical difference in seed coat color. This makes at least one claimed embodiment of the invention theoretically impossible, since seeds of the same variety would make the secondary seeds identical to the primary seeds and no seed coat color difference would exist, even according to applicants' own definition of the term variety:

"variety" is a grouping of plants that are homogeneous and stable, and clearly distinguishable by at least one phenotypic characteristic from all other groupings of plants

Clarification is necessary.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, applicant claims methods of using at least one phenotypical marker to identify plants with at least one proprietary trait and seed mixtures intended for use with the method, but fails to set forth which seeds in the claims contain proprietary traits. As such, the claims are indefinite because they appear to be incomplete.

Claim 1 recites the limitation "the primary seed coat color" in the last line of the sentence. There is insufficient antecedent basis for this limitation in the claim.

Claims 4 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, applicants refer to "[t]he plant seed mixture of claim 1 wherein the plant is [fill in the blank]." Applicants do not specify what the phrase "wherein the plant" is intended to refer to. Claim 1 claims at least two types of seeds: a primary seed for a plant variety and a secondary seed for a plant variety that could be the same or a different variety. For example, the primary seeds could be soybean seeds and the secondary seeds could be weed seeds.

Claim 14 recites the limitation "the dominant seed coat color of said plant varietal seeds" in the first part of the claim describing the primary seeds. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 4 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Raque ('349). Raque teaches a seed mixture of 97% to 99% genetically modified foodplant seed and 3% to 1% seed of a variety of the same foodplant having a

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phenotypical difference, which may include seed coat color. Absent evidence to the contrary, all groups of mixed secondary seeds would be assumed to be a mixture of heterozygous and homozygous seed coat color types.

Claims 1, 3, 4, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Raque ('621). Raque teaches a seed mixture of 90% to 99.999% genetically modified foodplant seed and 10% to .001% seed of a variety of the same foodplant having a phenotypical difference, which may include seed coat color. Absent evidence to the contrary, all groups of mixed secondary seeds would be assumed to be a mixture of heterozygous and homozygous seed coat color types.

Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Campbell. Campbell teaches a seed mixture of 90% to 99.9% seeds with a genetically modified trait and 10% to 0.1% seeds with or without a genetically modified trait. Specifically, Campbell teaches "Indian" corn containing transposable elements. As noted in Campbell, the term "genetically modified" does not indicate the hand of man, since genetic modifications occur in nature every day.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over either one of Raque ('349) or Raque ('621) in view of Wright et al..

The teachings of Raque ('349) and Raque ('621) are set forth above. Raque ('349) and Raque ('621) do not teach determination of seed coat color using near-infrared spectrophotometry.

Wright et al. teach that use of NIR spectrophotometry to analyze constituents of grains, including cell wall content, are known in the art [Col. 1, lines 25-35]. Seed coat color is predicated on the content of carotenoid and other pigments in cell walls.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use, as suggested by the teachings of Wright et al., NIR technology to determine differences in seed coat color for any mixed group seeds of interest that must be segregated by seed coat color; all seed coat colors recited in claims 6-12 are known in the art. It would also be obvious to use homozygous seeds, set forth in claim 2, since phenotyping would be less complex using a homozygous genotype.

One would be motivated to do this for two reasons. First, as taught by Wright et al. NIR technology can be integrated into mechanical farm equipment to measure the constituents of a sample. Second, NIR technology is capable of detecting sophisticated low-level differences in seed coat color for mixed seed samples that do not vary much in pigmentation to the naked eye.

A person of ordinary skill in the art would have an expectation of success in using NIR spectrophotometry to determine seed coat color because it was a preferred method in the art for analyzing grain constituents at the time of invention. As such, the invention as

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a whole was prima facie obvious to a person of ordinary skill in the art at the time the invention was made.

Conclusion

No claim is allowed.

References Cited

The references cited but not applied in any rejection herein are set forth to show the state of the art.

Future Correspondence

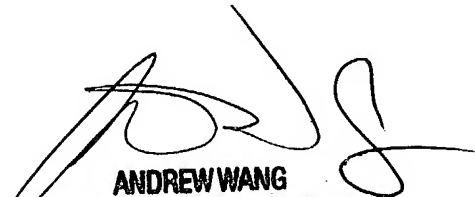
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wendy C. Haas whose telephone number is (571) 272-0976. The examiner can normally be reached on Monday through Friday 9:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on (571) 272-0811. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

W. C. Haas



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